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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/767,875

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EXAMINER

WALKER, KEITH D

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

04/01/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/767,875	<b>Applicant(s)</b> KIM ET AL.	
	<b>Examiner</b> KEITH WALKER	<b>Art Unit</b> 1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 March 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 10 and 12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 10 and 12 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Continued Examination Under 37 CFR 1.114***

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on 3/25/10 has been entered.

Claims 10 & 12 are pending examination as discussed below.

### ***Information Disclosure Statement***

The information disclosure statement filed on 3/25/10 has been placed in the application file and the information therein has been considered as to the merits.

### ***Claim Interpretation***

Concerning the limitations of claims 10 & 12 drawn to the amount of gas generated during initial charging, these limitations are product-by-process claims since the product is claimed as a result of a process, namely an initial charging process. So even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-

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process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process (MPEP 2113). The charging of the battery is part of the process of making the battery.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

1. Claims 10 & 12 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claimed limitations drawn to the negative electrode are not described in the instant specification in such a way to enable one skilled in the art to make or use the negative electrode as claimed. The negative electrode is claimed as "consisting essentially of a carbonaceous negative active material and an aqueous binder, the aqueous binder consisting essentially of a butadiene-based rubber and a cellulose-based compound". Using the transitional phrase "consisting essentially of" limits the scope of the claim to materials that do not materially affect the basic and novel characteristic of the claimed invention (MPEP 2111.03). The negative electrode as disclosed in the instant specification includes a current collector and electrolyte. Both of these materially affect the basic and novel characteristics of the claimed invention since

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the current collector is required for the transfer of electrical current and the electrolyte is required to enable the function of the battery, including the claimed charging procedure. The claimed negative electrode and rechargeable lithium battery are not enabled by the instant specification.

2. Claims 10 & 12 rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a negative electrode with a particular amount of binder and carbonaceous material, does not reasonably provide enablement for any amount of binder and carbonaceous material. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make the invention commensurate in scope with these claims. The claimed invention is drawn to a negative electrode for a lithium battery that has a particular amount of CO and H<sub>2</sub> gas generation during charging. As disclosed by the instant specification, the amount of gas generated is related to the decomposition of the atmosphere and cellulose binder. The amount of carbonaceous material used in the negative electrode would determine the size of the electrode and determine the amount of binder required. Since the amount of binder is related to the amount of gas generated, the amount of binder is critical to determining the amount of gas generated. The examples provided in the instant specification only illustrate using 96g of carbonaceous material with either 2g each of carboxymethyl cellulose and styrene-butadiene rubber or 1g each of the two binders. The instant disclosure does not provide instruction for how to make the

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claimed battery with the claimed gas generation for any size battery comprising any amount of binder.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 10 & 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The meets and bounds of the claimed product for each of claim 10 & 12 are unclear and therefore the claims are indefinite. The claimed products are directed to a negative electrode and a lithium battery, respectively. However, an amount of gas generation that is produced by a charging process is also claimed for each of the two products. It is unclear if the charging is a required limitation of the final product so that the final product is a charged lithium battery or if the charging process is a means of evaluating the negative electrode product and therefore not actually part of the claimed product.

4. Claim 10 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The limitation drawn to the charging of the rechargeable battery is indefinite because it is unclear what parameters are required for the charging process. Charging factors including the voltage, current, temperature, pressure and

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time are not claimed and therefore the subject matter of the invention is not distinctly claimed.

5. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The limitation drawn to the initial charging is indefinite because it is unclear what parameters are required for the charging process. While page 4 of the instant specification suggests "initial charging" as a charging of 0.1 to 1C rate for 1 to 5 cycles, other factors important to charging and gas evolution are not distinctly claimed. For instance, is the battery closed or open? Is the battery discharged between cycles? Is the gas generation amount a total for all of the 5 cycles or for each cycle?

### ***Claim Rejections - 35 USC § 102/103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 10 & 12 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 5,753,387 (Takami).

Takami discloses a rechargeable lithium battery with a negative electrode consisting essentially of a carbonaceous active material and an aqueous binder mixture consisting essentially of carboxymethyl cellulose and styrene-butadiene rubber (8:45-65, 17:49-55). A positive electrode and separator are used to complete the lithium battery (17:55-18:5). Since the negative electrode and battery are made with similar materials and in similar amounts, the amount of gas generated as claimed will inherently be the same for the same unclaimed charging characteristics. Furthermore, the process of charging is part of the process of making the battery and so the claim is a product-by-process claim even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process (MPEP 2113).

***Claim Rejections - 35 USC § 103***

7. Claims 10 & 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2003/0152835 (Dasgupta) in view of US 5,753,387 (Takami).



Dasgupta teaches a rechargeable lithium battery with a negative electrode consisting essentially of a carbonaceous active material and an aqueous binder of polyvinylidene fluoride (PVDF) (Abstract, 0023, 0030, 0031). A positive electrode and separator are used to complete the lithium battery.

Dasgupta is silent to the binder comprising a mixture of carboxymethyl cellulose and styrene-butadiene rubber.

Takami discloses a rechargeable lithium battery with a negative electrode consisting essentially of a carbonaceous active material and an aqueous binder mixture consisting essentially of carboxymethyl cellulose and styrene-butadiene rubber (8:45-65, 17:49-55). PVDF and carboxymethyl cellulose and styrene-butadiene rubber are taught as being equivalent binders that are well known in the art. As illustrated by Takami, it would be obvious to one skilled in the art to use carboxymethyl cellulose and styrene-butadiene rubber as a substitute for the PVDF as taught by Dasgupta. Choosing and using equivalent materials well known in the art for their intended purposes is obvious to one skilled in the art. Combining prior art elements according to known methods to yield predictable results and using known techniques to improve similar devices in the same way are considered obvious to one of ordinary skill in the art (KSR, MPEP 2141 (III)).

Since the negative electrode and battery are made with similar materials and in similar amounts, the amount of gas generated as claimed will inherently be the same for the same unclaimed charging characteristics. Furthermore, the process of charging is part of the process of making the battery and so the claim is a product-by-process claim

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even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process (MPEP 2113).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KEITH WALKER whose telephone number is (571)272-3458. The examiner can normally be reached on Mon. - Fri. 8am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Keith Walker/  
Primary Examiner, Art Unit 1795